

## DESCRIPTIONS OF TEN NEW ISOPODS.

By PEARL L. BOONE,

*Aid, Division of Marine Invertebrates, United States National Museum.*

The 10 new species herein described are accumulations from various collections of Isopods transmitted to the United States National Museum.

The one new genus, *Pterisopodus*, is so widely different from all previously known forms of the suborder Cymothoidea that it has been necessary to establish a new family for it, the Pterisopodidae.

The illustrations were made by Mrs. E. Bennett Decker, under my direction.

### Suborder GNATHIDIE.

#### Family GNATHIIDAE.

*GNATHIA TRIOSPATHIONA*, new species.

Plate 91, fig. 3.

*Male*.—Body elongate, 2.9 mm. wide, 8.8 mm. long, head and thorax of nearly uniform breadth, about 2.8 mm.; abdomen quite narrow, 0.9 mm., gradually tapering posteriorly. Head large, subquadrangular, dorsal surface deeply carinated; a median dorsal groove-like depression divides the head into two lobes; this depression widens anteriorly forming a deep V-shaped excavation, enhancing the bilobed impression; below this depression the frontal margin is produced triangularly into a rostral process with a tooth-like projection on either side of the median point; the frontal margin of each supraocular lobe is recurved, having a tricrenulate aspect. The superior antennae have a peduncle of four stout, subequal articles, and a flagellum of four short, fine articles, and extend to the flagellum of the inferior antennae; the inferior antennae have a peduncle of four unequal articles and a flagellum of eight small articles, and are one and one-half times as long as the mandibles. The eyes are elongate-oval, composite, moderately large, and placed in the extreme anterolateral margins.

The mandible is 2 mm. long with the outer margin a smooth, thickened ridge, broad at the base and decidedly tapering toward the tip which is acutely incurved; the inner margins are produced into three distinct blades—a superior, which is very narrow and

slightly expanded at the base, where it is about half as wide as the middle blade; thence narrowing to a mere line with the inner margin produced into three low, blunt undulations. The superior and middle blades are separated by a comparatively straight groove; the middle blade is subovate, broadly expanded in the middle, with the inner margin recurved, giving the appearance of four conical teeth; the area between the middle and inferior blades is a deeply excavated, twisted groove; the inferior blade is three-fourths as long as the middle blade, is broadly expanded, subtriangular, with the apex produced and truncate, and the inner margin undulating. The maxilliped has a palp of four articles.

**Thorax:** The first segment is rudimentary, united with the head as indicated by a suture line on the median dorsal area; the second and third segments are each about 1 mm. long with the lateral parts curved and expanded anteriorly; the fourth segment is slightly less than 1 mm. wide, with the anterior margin straight, the postlateral parts very little produced; the fifth segment is extremely long, about  $3\frac{1}{2}$  mm., subconvex, marked anteriorly by a ridge-like carination from side to side and longitudinally by a median depression; the sixth is similar to the fifth, but slightly longer and tapering posteriorly; the seventh segment is abruptly narrower than the preceding segment and is surrounded by the projections of the sixth segment.

**Abdomen:** This has the first five segments distinct, similar, each almost 0.6 mm. long, subconvex, and the terminal segment triangular,  $2\frac{1}{2}$  times as long as the preceding segment. The uropoda have the peduncle extremely short; the inner branch, long, narrow, posteriorly obtusely truncated; the outer branch is similar but is obtusely pointed posteriorly.

The holotype, an adult male, and two additional specimens (Cat. No. 50408, U.S.N.M.) were collected by the United States Bureau of Fisheries steamer *Fish Hawk* at station 7282, Gulf Stream off Key West, Florida, February 19, 1902, in a depth of 109 fathoms.

This species is readily distinguished by its unique mandibles and the curiously excavated head.

## Suborder CYMOTHOIDEA.

### Family CIROLANIDAE.

#### CIROLANA HERMITENSIS, new species.

Plate 91, fig. 2.

Body oblong-ovate, 9 mm. long, 4.9 mm. wide. Head wider than long with the frontal margin widely, evenly rounded.<sup>1</sup> The first pair

<sup>1</sup> The frontal margin is evenly rounded. The cleft appearance in plate 3, figure 2, is caused by the artist's representation of the antennae.

of antennae have the first and second articles about equal, 0.4 mm. long, the third short and a flagellum of 10 articles, and extends about to the first article of the flagellum of the second antennae. The second pair of antennae has the first, second, and third articles very short, stout, subequal; the fourth and fifth articles about equal, each as long as the first three articles taken together; the flagellum is long, slender, tapering, consists of 18 articles and extends to the anterior margin of the fourth thoracic segment. The eyes are small, round, complex, and situated in the anterolateral angles of the head. The frontal lamina is conspicuous, with the anterior margin triangulate. The maxilliped has a palp of five articles.

**Thorax:** The first segment is wide, with the lateral margin produced around the head to the posterior end of the eye. There are no epimera on the first segment. The second to seventh segments are similar, subequal, each about 1 mm. long; the epimera are distinct on all six segments and have the outer postlateral angles gradually acutely produced, those of the last three extending considerably beyond the segments. The first three pairs of legs are prehensile, the last four ambulatory; the inner margins of all seven pairs are furnished with strong spines.

**Abdomen:** This has the first segment, except a small area on each side, entirely concealed by the seventh thoracic segment; the second, third, and fourth segments are each about 1 mm. long, subequal, with the postlateral angles incurvate; the fifth segment is slightly longer than the fourth, but abruptly narrower and with the lateral parts not produced; the sixth segment is 2 mm. long, subtriangular, with the apex roundly truncate, crenulated, and ornamented with a row of spines. The peduncle of the uropod is not quite 1 millimeter long on the outer margin, but is nearly three on the inner, with the margin between recurved; the inner branch is about as long as the sixth abdominal segment, with the outer part evenly rounded and the inner part broadly expanded and rounded posteriorly. The outer branch is oval and about half as long as the inner. The entire margins of both branches are decidedly crenulate and fringed with spines.

**Color:** The specimen is heavily banded crosswise with light brown stripes, with an equal light creamy area between them on the head, thorax, and first five abdominal segments; the sixth segment and uropoda are similarly marked but have the bands longitudinally placed.

The holotype, an adult male (broken), and another specimen were collected in August, 1912, at Home Lagoon, Hermite Island, Montebello Islands, Australia (Orig. No. 116), and are in the collections of the Cambridge Museums, England.

This species resembles *Cirolana harfordi*<sup>1</sup> (Lockington), but is readily distinguished from it by the bizarre color pattern and the different posterior margination of the head. The present species has the first abdominal segment only partly concealed and the second abdominal segment not at all concealed, while *Cirolana harfordi* has the first two abdominal segments entirely concealed.

### Family EXCORALLANIDAE.

#### EXCORALLANA BERBICENSIS, new species.

Plate 92, fig. 1.

Body ovate, three and one-fourth times as long as wide, 13 mm., 4 mm.

Head wider than long, 3 mm., 2 mm., with the anterior margin widely, evenly rounded, and the posterior margin straight. The eyes are large, composed of large ocelli, occupy the sides of the head, and are separated in front by a distance equal to the length of one eye. The first pair of antennae have a peduncle of two articles each about 0.5 mm. long and a flagellum of 11 short, subequal articles, and extends almost to the fifth article of the second antennae. The second pair of antennae has the first, second, and third articles very short, subequal, the fourth and fifth articles about equal, each as long as the first three taken together, a flagellum of 25 short, subequal articles, and extends to the middle of the fourth thoracic segment.

The left mandible is distinctly bidentated, interlocking with the right mandible.

Thorax: The segments are subequal; the epimera are distinct on all except the first segment; the first two are rounded posteriorly, the last four have the outer posterior angle gradually more acutely produced. The first three pairs of legs are prehensile, the last four are ambulatory; all have the inner margin beset with short, stout spines.

Abdomen: The first segment is about half concealed by the thorax; the second, third, and fourth are subequal in length but have the outer posterior angle gradually more produced; the fifth is longer than the preceding segment, by which it is almost entirely overlapped on either side; it is ornamented by two blunt tubercles, one on either side of the median line; the posterior margin is produced to a median point, giving the segment a triangular appearance; the sixth segment is triangulate with the apex evenly rounded and ornamented near the base with four almost invisible tubercles, one on either side of the median line and one near the base of the peduncle of each uropod.

The peduncle of the uropod is short and bears a tubercle near the outer angle; the larger, inner branch is broadly rounded posteriorly,

<sup>1</sup> *Aega harfordi* Lockington, Proc. Cal. Acad. Sci., vol. 7, 1877, pt. 1, p. 46. *Cirolana harfordi* Richardson, Proc. U. S. Nat. Mus., vol. 21, 1899, pp. 822-823.



the smaller, outer branch is very narrow, obtusely pointed posteriorly, and bears six teeth in the outer margin. The terminal segment and both blades of the uropoda are heavily fringed with fine, closely set hairs.

Pleopoda: Four pairs, subequal, similar in structure; the outer branch is the larger and is broadly evenly rounded; the inner branch is about two-thirds the size of the outer and of similar shape.

The holotype and an additional specimen (Cat. No. 50402, U.S.N.M.) were collected in the Rio Berbice, British Guiana, by the Rev. James Aiken, February, 1913.

This species is at once recognized by the simplicity of the sculpture of the telson.

### Family CYMOTHOIDAE.

#### BRAGA OCCIDENTALIS, new species.

Plate 91, fig. 1.

*Female*.—Body ovate, 17 mm. long, 11 mm. wide. Head triangulate with the apex produced and slightly truncate, forming a blunt rostral process about 1 mm. long. Eyes large, complex, elongate-ovate, and located in the extreme postlateral angles of the head. The first antennae are composed of seven short, stout, subequal articles and are about three-fourths as long as the second pair. The second antennae consist of eight short, stout, subequal, articles and extend almost to the first thoracic segment.

The first thoracic segment is 3 mm. long and has the anterolateral margins slightly produced and the postlateral margins obliquely truncated; the second and third segments are each 1.5 mm. long, the fourth is 2 mm. long, the fifth and sixth are each 1.2 mm. long, and the seventh is 0.9 mm. long.

All of the segments except the first have the lateral area divided by a diagonal carination, which causes the postlateral angles to appear as elevated, horn-like projections; these segments have distinct epimera extending along the lateral borders; the epimera gradually increase posteriorly in breadth and have the external postlateral angles roundedly produced. All seven pairs of legs are strongly prehensile and have the dactyl extremely curved, the tip being excavated, somewhat resembling an arrowhead.

The marsupial pouch is composed of three pairs of plates. These are thoracically attached and are very convex, overlapping each other like rosebud petals.

Abdomen: This has the first segment entirely and the second partly concealed by the seventh thoracic segment, the second segment appears about 1 mm. long and has the lateral parts concealed, the third and fourth segments are each about 1.1 mm. long, the fifth

is about 1.4 mm. long in the median area but narrows toward the sides and has the posterior margin recurved. The terminal segment is 4.8 mm. long and 5 mm. wide, slightly asymmetrical, shield-shaped. The uropoda have the peduncle quite flexible and the inner posterior angle decidedly elongated; the inner blade is elongate-ovate, fringed with hairs; the outer blade is about 1 mm. longer than the inner, has the outer margin decidedly curved and the inner nearly straight. The uropoda are not quite as long as the terminal segment.

The pleopoda are rather thick, ovate, leaf-like structures, but are too broken in the type-specimen to permit of critical diagnosis.

The holotype, an ovigerous female, was collected off the coast of California by Messrs. LeConte and Dana in 1866 and is in the collections of Yale Museum, Cat. No. 302.

This species is the first representative of the genus recorded from the west coast of North America, all previously recorded species being from the east coast of South America.

#### PTERISOPODIDAE, new family.

Body strongly depressed, oval. Mandibles small, with a palp of three articles. Cutting edge broad, dentate. First maxillæ with outer lobe slender, tipped with small spines; inner lobe feeble. Maxilliped with a palp of two articles. Eyes feebly developed, inconspicuous.

Thorax: All seven segments with lateral extremity widely expanded and produced distally into an acute, roughly triangular process with apex directed posteriorly, this formation becoming more conspicuous on the last three segments. Epimera perfectly fused with segments. Legs: All seven pairs strongly prehensile. The first joint strongly produced into a curious wing-like process which is roughly triangular, with the apex directed outward and posteriorly; that of the first leg fused with the thorax; those of second to seventh free, conspicuous.

Abdomen: Compressed, decidedly narrower than thorax, composed of six segments, strongly curved and produced posteriorly, overlapping each other; sixth segment large. Uropoda lateral, fan-like.

#### PTERISOPODUS, new genus.

With characters of family, only genus known, of which the type is *Pterisopodus bartschi*, new species, collected in Bahia Honda, Cuba.

#### PTERISOPODUS BARTSCHI, new species.

Plate 89, figs. 2-5.

Body strongly depressed, oval, 14 mm. long, 10.8 mm. wide; thoracic margins produced acutely into roughly triangular, wing-like

formations. A broad, median dorsal black band extends the length of the body; followed on either side by a narrower creamy band, then a broader black band which widens posteriorly extending to the extreme lateral margin from the fifth thoracic backward; the lateral margins of the head and first three thoracic segments are tipped with cream color.

Head wider than long, 3.5 mm., 2.5 mm., anterolateral margin oval; median posterior margin oval, less curved postlaterally. Eyes very feeble, located in postlateral angles of head. The antennae are short and attached so far on the ventral surface of the head that they are scarcely visible dorsally. The first pair consist of eight, short, stout, subequal articles and extend almost to the middle of the first thoracic segment. The antennae are similar but slightly longer, consisting of ten articles. Mandibles small, with a palp of three articles. First maxillae with outer lobe slender, tipped with small spines; inner lobe feeble. Maxilliped with palp of two articles.

Thorax: First segment 2.5 mm. long, anterior margin excavated, anterolateral angles bluntly produced beyond the angles of the head; second, three-fifths as long as first; third, a little less than second; fourth as long as second; fifth and sixth slightly longer than the fourth; seventh slightly less than sixth. Epimera perfectly coalesced with segments, line of fusion wanting; the lateral parts widely expanded and produced distally into an acute, roughly triangular process with apex directed posteriorly. Legs: Seven pairs, subequal, strongly prehensile, similar in structure. The first joint strongly produced into a curious wing-like process, which is roughly triangular with acute apex directed outwardly and posteriorly; this process on the first leg fused with the first thoracic segment, those of second to seventh legs, inclusive, distinct; those of the second and third legs are so produced as to be conspicuous on the dorsal side; the second process equals in length the produced extremity of the second segment; the third is slightly less than the extremity of the third segment; the fourth to seventh, inclusive, are not visible dorsally; the fourth and fifth are stout and not quite so long as the third; the sixth is slenderer and longer than the fifth; the seventh is slender and quite pointed; the second joint of the leg is very small; the third is the longest with unique basal curvature adapted to sculpture of the first joint; the fifth is slightly longer than the fourth; the sixth is a strongly curved claw folding over on the fifth, with a tip reaching the basal part of the fifth joint.

Abdomen: This consists of six segments, the first of which is hidden, except the postlateral extremity, by the thorax; the second, third, fourth, and fifth segments are subequal, about 1 mm. long; they are decidedly curved posteriorly and overlap each other. The postlateral angles are acutely produced, the sixth segment is shield-

shape, wider than long (4 mm., 3.1 mm.), its length being slightly greater than that of the first five segments; the postlateral margin is evenly rounded. Uropoda 2 mm. long, biramous; peduncle triangular, posterior margin bluntly toothed, with inner postlateral angle acutely produced; outer branch slender, curved, terminating in a bluntly rounded point; the inner branch is about the same length, more oval basally, but also bluntly pointed distally. Pleopoda five pairs, natatory, biramous, outer branch larger, oval, folding over the smaller but similar inner blade.

The holotype, a single specimen (Cat. No. 50406, U.S.N.M.), was collected in Bahia Honda, Cuba, June 7, 1914, by Dr. Paul Bartsch and Mr. John B. Henderson of the *Tomas Barrera* Expedition to Northwestern Cuba. (Coll. No. 504.)

### Family SPHAEROMIDAE.

#### SPHAEROMA EXOSPHAEROMA, new species.

Plate 90, figs. 1, 3.

Body oval, twice as long as wide, 11 mm., 5.5 mm. Head twice as wide as long, anterior margin evenly rounded, posterior margin between the eyes straight, deeply, widely carinated. Eyes very large, round, compound, located in the postlateral angles of the head. The first antennae have the first segment inconspicuous, the second elongated, the third not quite as long as the second; the flagellum, which is broken, retains seven articles and extends midway to the first thoracic segment. The second antennae have the basal article inconspicuous, the second about 1 mm. long, the third about 1.5 mm., the fourth about 1.75 mm., and the fifth about 2 mm. long; the flagellum, which is broken, retains 16 articles, the first to ninth inclusive, each bearing on the outer distal margin a stiff brush of setae. The second antennae (broken) extend to midway the first thoracic segment. The maxilliped has a palp of five lobes; the second, third, and fourth of these are more lobed than are previously described *Sphaeromas*, but this lobing is less pronounced than is found in typical *Exosphaeromas*. The second, third, fourth, and fifth lobes of the maxilliped are furnished with brushes of long hairs.

The thorax has the first segment about 0.5 mm. wider than the rest, with the lateral margin widely expanded anteriorly, curving around the eye to the anterior margin; posteriorly expanded acutely and produced, overlapping the anterior half of the second thoracic segment; the posterior margin is deeply carinated. The second to fifth segments are subequal, the seventh is nearly as wide as the first segment. The legs are all ambulatory.

The abdomen is composed of two segments. The first has suture lines indicating the coalescence of several segments. The terminal



segment is domelike with the posterior margin evenly rounded. The two branches of the uropoda are about of equal length; the fixed inner branch is oar-blade shaped; the movable outer branch is more tapering posteriorly and has the outer margin distinctly tridentate on the right uropod, and bidentate on the left. The margins of the terminal segment of the abdomen of both branches of the uropoda are fringed with very minute, closely set hairs.

The entire body surface is marked with fine brown pigment spots; dense granulations arranged in longitudinal ridges occur on either side of the thoracic segments, and a double row of coarse granulations borders the posterior margin of each thoracic segment, which is distinctly carinated.

The holotype (Cat. No. 50407, U.S.N.M.), comes from Mariveles, Luzon, Philippine Islands, and was collected by Mr. Albert M. Reese.

The species is unquestionably a form intermediate between the two genera *Sphaeroma* and *Exosphaeroma*, more pronouncedly so than *Exosphaeroma crenulatum* Richardson<sup>1</sup> or *Sphaeroma globicauda*<sup>2</sup> Dana, and after a critical examination of the types of many species of both genera, I feel it is probable that the finding of additional specimens will make it imperative to unite these genera.

EXOSPHEROMA BARRERAE, new species.

Plate 90, figs. 2, 4.

Body elongate-ovate, convex, very contractile; length, 13.5 mm., width 7 mm.

Head subcrescentic, anterolateral margins produced, entirely concealing the antennae. Eyes large, round, compound, situated in the extreme postlateral region of head; the posterior margin of head between the eyes is decidedly carinated. The first antennae are about four-fifths as long as the second pair, and have the first and second articles of the peduncle decidedly swollen, the second being much shorter than the first; the third is long and slender and the flagellum consists of 20 articles. The second antennae extend backward and lie under the epimeral plates of the first to third thoracic segments, reaching to the anterior margin of the second thoracic segment; the peduncle consists of five subequal articles and the flagellum of 19 articles. The maxilliped has a palp of three articles. The mandible has a palp of three articles.

Thorax: The first segment is 2 mm. long, with the lateral margins decidedly expanded and produced anteriorly, surrounding the anterolateral margin of the head; also expanded and acutely produced

<sup>1</sup> *Exosphaeroma crenulatum* Richardson, Trans. Conn. Acad. Sciences, vol. 11, 1902, pp. 292-293, pl. 39, fig. 40.

<sup>2</sup> *Sphaeroma globicauda* Dana. Stebbing., T. R. R., The Fauna and Geography of the Maldivé and Laccadive Archipelagos, vol. 2, pt. 3, 1905, p. 710.

postlaterally. Second segment 1 mm. long. Second, third, and fourth segments subequal, fifth, sixth, and seventh segments narrower and subequal, the lateral margins decidedly, acutely produced into a toothlike process; epimera completely coalesced with segments, but with line of fusion very distinct.

Legs: All six pairs are ambulatory, subequal, similar in structure; the third, fourth, and fifth joints are heavily fringed along the inner margin; the dactyl of each is distinctly bifid.

Abdomen: This is biarticulate; the first five segments are fused, the first is entirely and the second almost entirely hidden by the thorax; three suture lines on either side mark the areas of the third, fourth, and fifth segments, respectively; these suture lines are lost on the median region; the terminal segment is smooth, domelike, with two indistinct blunt tubercles posteriorly; the postlateral margin is triangularly produced, pointed acutely at the median extremity and with a distinct, small, pointed tooth on either side of the median point. The uropoda are shorter than the terminal segment, the immovable inner branch is the larger, and has its outer postlateral angle truncate; the inner movable branch is three-fourths as broad, lanceolate, and with its outer postlateral angle very acute and the entire outer branch minutely crenulated on the lateral margins. There are five pairs of pleopoda, which are biramous and heavily fringed with fine hairs.

The holotype (Cat. No. 50404, U.S.N.M.) was collected at Cabanas, Cuba, by Dr. Paul Bartsch and Mr. John B. Henderson, of the *Tomas Barrera* Expedition to Northwestern Cuba, 1914. (Coll. No. 512.)

This species is readily recognized by the unique sculpturings of its domelike telson.

## Suborder IDOTHEOIDEA.

### Family ARCTURIDAE.

#### *ASTACILLA CALIFORNICA*, new species.

Plate 89, fig. 1.

Body narrowly elongated, 6.1 mm. long, exclusive of antennae, and 2.2 mm. wide. A distinct median dorsal ridge is present, which attains its greatest prominence in a bluntly conical tubercle on the anterior part of the fourth thoracic segment. Segments decidedly convex dorsally. Fourth thoracic segment two-fifths the length of entire body. Sutures deeply constricted.

Head slightly wider than long (0.9 mm., 0.75 mm.), with decided anterior excavation between the produced anterolateral angles; lateral margins lobate, swollen anteriorly by prominent ocular lobes. Eyes composite, suboval, 9.6 mm. long., situated anterolaterally.

Superior antennae about 1.5 mm. long, basal joint short, stout; second and third article slightly longer, very slender; flagellum short, four-ringed, bearing olfactory filaments. Inferior antennae very slender, as long as the body, (6.1 mm.), basal joint short, anterior margin produced into serrations which encup the base of the second article; second article slenderer posteriorly, slightly swollen anteriorly, twice the length of the first; third and fourth articles of equal length, one-third longer than the second; fifth and sixth extremely short, subequal, flagellum less than last peduncular segment. The maxilliped has a palp of five articles.

Thorax: First, second, and third segments of equal length but of gradually increasing width; lateral parts of first segment expanded, surrounding the posterior part of head, anterolateral angles extending to the eyes; epimera of the second and third segments distinct, lateral margin broadly expanded, lobate; fourth 2.5 mm. long, decidedly wider anteriorly than the preceding segments, thence narrowing posteriorly (greatest width 2.2 mm., least width 0.9 mm.), a prominent median dorsal tubercle summits the greatest width and a similar less prominent one the least width of this segment; the boarder epimera occupy the anterolateral angles; posterior margin deeply excavate; fifth segment 0.3 mm. long, the sixth less, the seventh equals the sixth; epimera on last three segments small, angular, occupying the anterolateral angles.

Abdomen: This consists of two segments, the first of which is short and evenly vaulted above, while the terminal segment is long, narrow, and produced on the sides near the base into an acute process or expansion of the lateral margin, and a second similar but less prominent process two-thirds of the length of the last near the posterior end; the extreme termination being blunt and triangular.

First four pairs of legs slender, forward-directed, densely hirsute, each successive pair longer than the preceding; the last three pairs ambulatory, gradually decreasing in length.

The holotype (Cat. No. 50401, U.S.N.M.), an adult female, was collected by the Venice Marine Biological Station, on seaweed, at Venice, California.

This species is at once distinguished from previously described *Astacillas* by its greater size and the unique pyramidlike shape of the fourth thoracic segment.

## Suborder ONISCOIDEA.

### Family ONISCIDAE.

*PHILOSCIA MINUTISSIMA*, new species.

Plate 92, fig. 2.

Body elongate-ovate, about two and a half times as long as wide, 4 mm., 1.6 mm. Head about twice as wide as long, with the frontal

margin broadly, evenly rounded, and the anterolateral angles rounded, the eyes being so situated on a ridge as to produce the appearance of a small lobe in front of each eye. The eyes are small, compound, lateral. The first pair of antennae are inconspicuous, rudimentary, consisting of one small joint, tipped with a few bristles. The first, second, and third articles of the second antennae are short, stout, subequal; the fourth article is twice as long as the third; the fifth is slightly greater than the fourth; the flagellum is biarticulate; the second pair of antennae extends to the anterior margin of the third thoracic segment. The maxilliped has a palp of three articles. The first maxilla has the inner plate furnished with several small spines; the outer plate is quadridentate.

Thorax: The first segment is the longest, about as long as the head, with the anterolateral margins decidedly curved and extending around the head to the posterior margin of the eye; the second to seventh segments are subequal; the epimera are completely fused with the segments. The lateral margins of the first three segments are straight, the postlateral angles of the fourth, fifth, sixth, and seventh segments are gradually, acutely produced, that of the seventh entirely concealing the sides of the first and second abdominal segments; also the anterior margin of the third segment. The legs are all ambulatory, similar and subequal.

Abdomen: This is decidedly narrower than the thorax; the first and second segments are strongly compressed and partly concealed by the seventh thoracic segment; the third, fourth, and fifth segments are subequal, each about equal to the first and second segments taken together, and having the postlateral angle gradually acutely produced; the sixth segment is small, triangular, with the apex bluntly pointed. The peduncle of the uropoda extends to the extremity of the abdomen; the inner branch is very slender, pointed, and extends about 1 millimeter beyond the abdomen; the outer branch is about 1 mm. long and 0.2 mm. wide, and is bluntly pointed at the end.

Color: yellowish with irregular fuscous patches and with a longitudinal light area or band in the middle of the dorsal surface.

This species is nearest to *Philoscia culebrae* Moore,<sup>1</sup> but differs in the following: (1) The biarticulate flagellum of the second antennae; (2) the head is more rectangular, and the lobed aspect of its frontal margin is less decided; (3) the appendages are less setiferous; (4) the abdomen, as a whole, is wider and shorter, its lateral line being approximately continuous with that of the thorax.

The holotype and six additional specimens (Cat. No. 50403, U. S. N. M.), secured "on bat guano" in Hunt's Cave, New Providence, Bahamas, June 29, 1914, were presented to the United States National Museum by Mr. George P. Englehardt.

<sup>1</sup> *Philoscia culebrae* Moore, Bull. U. S. Fish Commission, vol. 20, pt. 2, 1902, p. 176, pl. 11, figs. 13-17.



## LEPTOTRICHUS VEDADOENSIS, new species.

Plate 92, fig. 3.

Body elongate-ovate, subconvex, twice as long as wide, 6 mm., 3 mm., densely granulated. Head produced in front in a conspicuous median lobe which is squarish with the anterior margin rounded and is tilted upward and outward; the lateral lobes are large and divergent and broadly rounded. The eyes are moderately large, oval, complex, and situated at the base of the lateral lobes. The second antennae have the first four articles of the peduncle subequal; the fifth is much longer, about 1 mm.; the flagellum is biarticulate, the first article being about two-thirds as long as the second and terminating in a minute hook-like point; the flagellum is about as long as the fifth joint; the second antennae extend to the anterior margin of the second thoracic segment.

Thorax: The first segment is slightly longer than the others, about 1.1 mm., with its lateral margins expanded and surrounding the head, the second to seventh segments, inclusive, are similar, subequal, with their lateral parts moderately expanded and the post-lateral angles gradually, acutely produced. The legs are similar, subequal, and have the inner margin ornamented with brushlike tufts of spines.

Abdomen: The first and second segments are compressed and have the lateral parts concealed by the seventh thoracic segment; the third, fourth, and fifth segments are broadly expanded, forming a continuous curve with the margin of the thoracic segments; the sixth segment is abruptly narrow, triangulate, with the posterior margins recurved. The peduncle of the uropod is broad, about two-thirds as long as the terminal segment; the inner branch is minute, placed at the inner distal angle of the peduncle; the outer branch is broken off.

The posterior margins of the head, thorax, and first five abdominal segments are heavily carinated. The entirely dorsal surface is densely granulated, has scattered minute pigment spots, and is finely setiferous.

The holotype (Cat. No. 50405, U.S.N.M.) and two paratypes come from La Puntilla, Vedado, near Habana, Cuba, and were secured and donated to the United States National Museum by Dr. Mario Sanchez Roig. All these specimens are slightly broken.

This species is very near *Leptotrichus granulatus* Richardson,<sup>1</sup> but differs from it in the following: (1) Greater length of the second antennae, (2) in having the central lobe of the head longer or greater, (3) in the shape of telson, (4) the carinated aspect of the margins of the segments is more pronounced and the entire specimen is more compact than is *Leptotrichus granulatus*.

<sup>1</sup> *Leptotrichus granulatus* Richardson, Trans. Conn. Acad. Sciences, vol. 11, 1902, p. 303, pl. 40, fig. 58.

## EXPLANATION OF PLATES.

## PLATE 89.

- FIG. 1. *Astacilla californica*, new species, type, lateral view.  
2. *Pterisopodus bartschi*, new species, type, dorsal view.  
3. *Pterisopodus bartschi*, new species, type, ventral view.  
4. *Pterisopodus bartschi*, new species, type, maxilliped.  
5. *Pterisopodus bartschi*, new species, type, mandible.

## PLATE 90.

- FIG. 1. *Sphaeroma exosphaeroma*, new species, type, dorsal view.  
2. *Exosphaeroma barrerae*, new species, type, dorsal view.  
3. *Sphaeroma exosphaeroma*, maxilliped.  
4. *Exosphaeroma barrerae*, ventral view of head.

## PLATE 91.

- FIG. 1. *Braga occidentalis*, new species, type, dorsal view.  
2. *Cirolana hermitensis*, new species, type, dorsal view.  
3. *Gnathia triospathiona*, new species, type, dorsal view.

## PLATE 92.

- FIG. 1. *Excorallana berbicensis*, new species, type, dorsal view.  
2. *Philoscia minutissima*, new species, type, dorsal view.  
3. *Leptotrichus vedadocensis*, new species, type, dorsal view.